Appendix A
UNIT COMMUNICATIONS

This appendix describes how and with whom personnel units communicate and the communication structure used.

COMMUNICATION REQUIREMENTS

To perform their critical missions, personnel units must have reliable internal and external communications capable of data transmission, and the communications must be "assured." Assured communications is a system that provides the required capability when needed. It is the responsibility of the senior Army commander to provide the assured communications system whether within the area of operations (AO) or from the AO to the sustaining base.

Due to the wide dispersion of personnel units throughout the ever-changing battlefield, Mobile Subscriber Equipment (MSE) will be the primary mode for external communications. Information must be available in a timely manner and in the required format. Tactical satellite access, linked with MSE, will ensure successful personnel operations on the battlefield.

Personnel units must be able to communicate verbally with each other and various other units as well as transmit and receive large volumes of digital data to effectively perform their critical functions. These units may include supporting and supported units, mortuary affairs units, medical units and facilities, and finance units. Personnel command and control units (PERSCOMs, PGs, PSBs) must communicate to determine and coordinate personnel and operational support requirements, resolve inquiries, receive and provide technical guidance and policies, receive and issue plans and orders, coordinate movement, and receive and transmit tactical and technical reports.

Personnel command and control unit commanders, or their designated representative, also coordinate directly with many different staff and tactical elements for support. These include troop welfare, intelligence, operations, transportation, supplies, subsistence, maintenance, medical, religious, legal, and finance. Secure mobile communications equipment will be used in the commander's vehicle and the operations section. MSE will be used in all PERSCOM, PG, and PSB sections in the execution of mission requirements.

Operational personnel units include PSBs, PDs, replacement battalions and companies, postal companies, and bands. Communication requirements for operational personnel units are similar to those of the personnel command and control units. Deployed operational personnel units will use MSE and radio to communicate with

their parent unit HQs, supporting units, and supported units. Operational personnel units will require secure, mobile communications for their own admin/log needs while away from their parent unit HQs and for tactical operations in accordance with rear operations doctrine. Operational personnel units will access an area MSE node to reach the unit with which they must communicate.

PLANNING CONSIDERATIONS

USER RESPONSIBILITIES

The user-owned and -operated concept applies to all automation assets as well as the telephone terminal.

Planning for Data Transfer

There are many ways we can transfer data on the battlefield. Intense planning and coordination between the deploying unit and the signal support unit is a must. The deploying unit's staff must decide what type and how much data they will need to pass prior to deployment. They must determine the type and amount of hardware and software required, and they must know how to install and use it.

Implementation

In addition to being able to install the equipment, users must be knowledgeable of the communications software packages installed in their automation terminals. The signal support unit will provide the network access point (LAN Port, X.25 Port, Junction Box) and provide technical advice and assistance when required.

Sustainment of Information Systems

Maintenance and support of all common table of allowance (CTA) and table of organizational equipment (TOE) automation equipment is the responsibility of the individual user. The signal support unit will not provide maintenance support and does not carry spare automation parts.

SIGNAL OPERATING INSTRUCTIONS

The corps or TAACOM signal officer provides the necessary signal operating instructions (SOI) to the personnel group S2/S3 who is responsible for providing necessary extracts to subordinate commanders. These extracts must include information on major supported units in the personnel unit's area of responsibility.

COMMUNICATIONS SYSTEMS AND MEANS

Personnel units need various types of communications systems in sufficient quantities to adequately provide personnel support on an extended battlefield. Communications equipment includes frequency modulated (FM) radios, MSE, and facsimile machines.

MOBILE SUBSCRIBER EQUIPMENT

MSE is a voice and digital communications system that provides common user support to a geographic area, as opposed to dedicated support to a specific unit or customer. Area coverage is accomplished through a series of nodal switches deployed throughout the battlefield that connect fixed and remote users. At corps and below, MSE provides the capabilities for both circuit-switched (i.e., dial-up) and packet-switched data transmission. At EAC, Tri-Service Tactical Communications (TRI-TAC) equipment provides similar capabilities. User-owned equipment may consist of Digital Nonsecure Voice Telephone (DNVT), Digital Secure Voice Telephone (DSVT), Single Subscriber Terminal (SST), Mobile Subscriber Radio Terminal (MSRT), and facsimile. MSE will give personnel units the ability to communicate with supported units, supporting units, deployed personnel units, or detachments.

Non-secure voice access to the MSE system is through the DNVT. DNVTs tie into the MSE system via field wire. DNVTs interface with facsimile for informal record traffic and with single subscriber terminals (AN/UGC-144) for formal worldwide record traffic. Formal record traffic is sent over the Automatic Digital Network (AUTODIN) by the UGC-144 communications terminal (CT). Respective staff elements own and operate the equipment, which should speed the transfer of formal information. DNVTs can also pass data by using the data port connection and the Tactical Terminal Adaptor (TTA). The TTA functions as a digital modem and can communicate over MSE and TRI-TAC digital voice lines to other automation devices which also use a TTA (i.e., TACCS, ULC, and ATCCS). This method should be used in limited, specific cases to make the most efficient use of telephone lines primarily intended for voice communications.

Subscribers on-the-move use the MSRT, which consists of a very high frequency (VHF) radio and a DSVT. MSRTs are normally mounted on a vehicle, but a stand-alone configuration can be provided for use in command posts or other static situations. The MSRTs interface with the MSE system through a radio access unit (RAU). RAUs are deployed to maximize area coverage and MSRT concentrations. As long as the radio unit has line-of-sight contact with the RAU, it has

connection into the area system. A SEN switchboard configuration is shown in Figure A-1.

Subscribers gain access to the network through "affiliation" by entering an affiliation request code, personal code, and directory number. Subscribers must be connected to a junction box (J-1077) before attempting to affiliate. Subscribers will keep their access until they move. Prior to moving, they must disaffiliate their telephone. Mobile users affiliate by dialing the same codes through a local RAU. They are automatically reaffiliated as they move from one RAU's area of coverage to another. An affiliation light lets a mobile user know if he has moved out of the area of coverage and needs to move to regain access to the network.

The subscriber and its equipment are owned, operated, and maintained by the users, who are also responsible for the installation of the field wire from the user-owned equipment to the interface point. The signal units operate the MSE area system. The operations and plans staff element will determine the location of interface points based on the recommendations of the signal officer.

TACTICAL PACKET NETWORK

The primary method to pass data on the battlefield will be through the use of the Tactical Packet Network (TPN). It maintains the present MSE architecture and consists of Wide Area Networks (WAN) made up of interconnected packet switches at EAC and ECB and local area networks (LAN) made up of user-owned and operated computers. Access can be gained by directly connecting to a packet switch or connecting to a CP LAN. Packet switches are located at every MSE node, and gateway connections between different networks are located at the node center switch. (Figure A-2).

LAN connections are made by using an 802.3 LAN card and coaxial cable. X.25 packet connections access the TPN by using a tactical packet adaptor or TPA. The TPA converts computer output into a form that can be passed over the tactical communications system. Field wire from the TPA is connected to a junction box (J-1077) at a node. The user must install, operate, and maintain the LAN. The user is also responsible for laying the wire to the network access point (LAN port, X.25 port, junction box). The signal support unit will assume responsibility from that point and will provide technical assistance when required.
(Figure A-3)

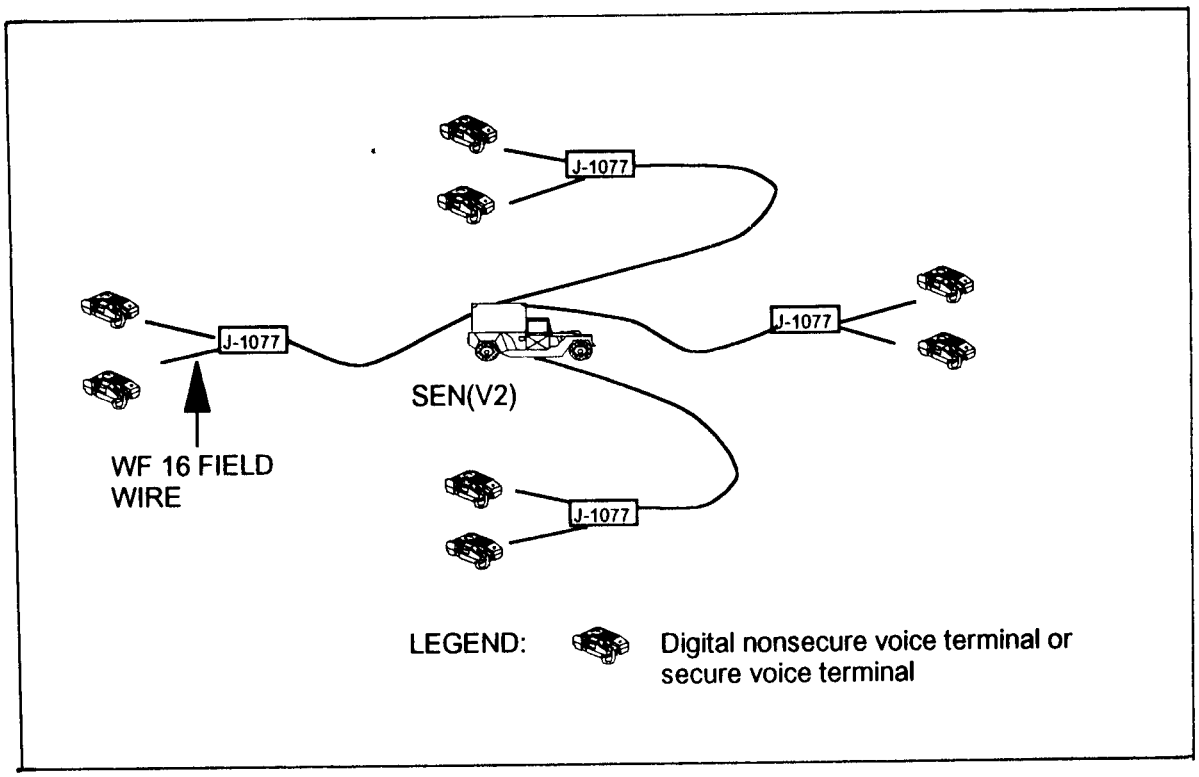

FIGURE A-1

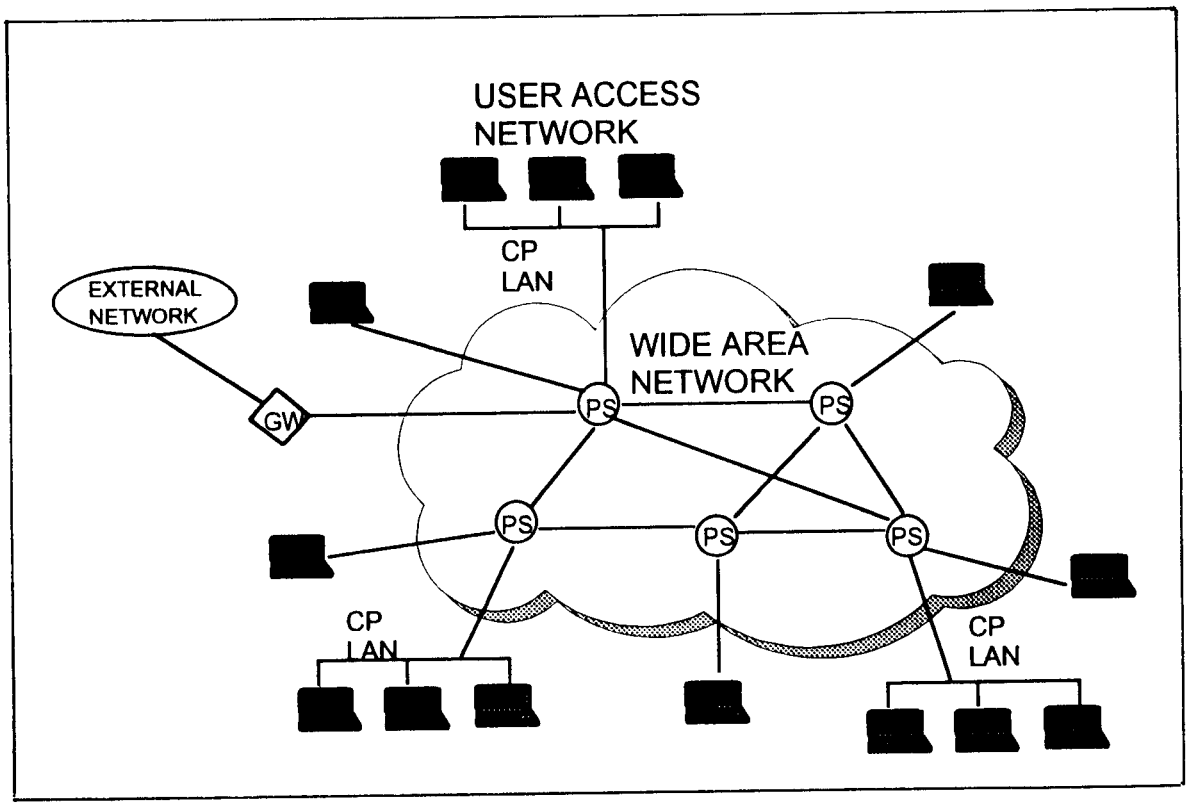

FIGURE A-2

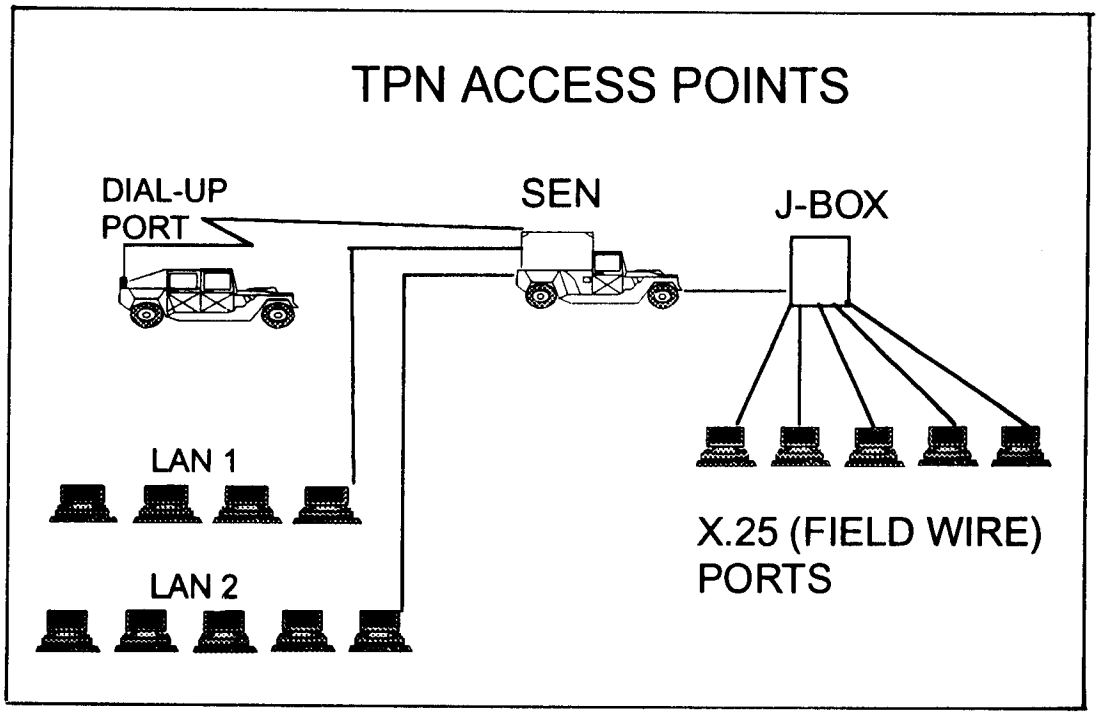

FIGURE A-3

FM RADIO

Personnel units will use FM radios in lieu of and as a supplement to other communications means. They must be able to communicate in a mobile, secure mode to coordinate support and movement requirements, as well as to coordinate with the parent personnel unit headquarters and other organizations. The Single Channel Ground and Airborne Radio System (SINCGARS) will be the primary FM voice radio used to support personnel units.

Personnel units will primarily communicate with each other on the FM Administrative and Logistics Net. They may also use the Command Net, Operations and Intelligence Net, and Rear Operations Net.

- Administrative and Logistics Net is used for personnel support and supply information requirements. This traffic does not have the same immediate tactical importance as the command net.
- Command Net is used for tactical command and control by the commander.
- Operations and Intelligence Net is used to control operations and pass intelligence information within commands. The net control station is located at higher headquarters. Personnel units will use this net when deployed from the parent personnel unit,
- Rear Operations Net is used to communicate with the rear tactical operations

center (RTOC). This net provides a means of disseminating tactical information through the base cluster and supporting perimeter defense actions. The RTOC commander determines the use of communications assets.

COURIER

Couriers/messengers can be used for transmitting written messages or for backup if electronic data transmission capabilities are not available. Use of couriers will slow the speed of transfer of information and may reduce its usefulness to the intended user. Conversely, couriers can be an acceptable means of transferring information that is not especially time-sensitive, and using couriers will allow for more effective use of the communications lines.

INFORMATION SYSTEMS SECURITY

Information systems security is an integrated approach to protecting all components of the system - communications, computers, and information. The goal of information systems security is to provide the user with a system that meets the security requirements for the mission and the environment. Communications security (COMSEC) measures deny unauthorized persons access to valuable information which might be derived from electronic transmissions. Prevention measures include crypto-security, physical security, transmission security, and emission security. Computer security (COMPUSEC) protects the operating system and specific application software from viruses and other forms of malicious code. The information resident in data bases must also be protected from unauthorized access to ensure the integrity and validity of the data. Specific information systems security procedures for personnel units will be outlined in unit operational manuals and directives.

ON-GOING INITIATIVES

The Multi-level Security (MLS) and Combat Service Support (CSS) Automated Information Systems Interface (CAISI) are two on-going initiatives.

COMBAT SERVICE SUPPORT AUTOMATED INFORMATION SYSTEM INTERFACE

The CAISI will process the bulk of the CSS STAMIS information in the future. Better known as a "concentrator," it will concentrate data at a central location and transfer the files to other users on the tactical network or passed back to the sustaining base. Connection to the TPN is made through an 802.3 LAN or X.25 port using a TPA. The CAISI can also enter the circuit- switched network through

the use of the TTA. Concentrators will be located at all major CSS organizational elements from brigade to EAC. (Figure A-4)

MULTI-LEVEL SECURITY

MLS is required for transferring information of various security classifications over common user data networks to multiple users. Currently we can pass data only through the tactical network or the strategic network; one cannot interface with the other. Our tactical network is SECRET high. The Defense Data Network is actually four different networks with four classification levels. MILNET is UNCLASSIFIED, DISNET 1 is SECRET, DISNET 2 is TOP SECRET, and DISNET 3 is TOP SECRET SCI. The only way we can currently transfer data from the tactical environment to the strategic environment is through a process called' 'air-gap. " Unclassified data is transmitted through the tactical network. The computer on the receiving end saves the data to a disk, and it is then hand-carried to another terminal connected into the MILNET. This manual transfer is necessary to maintain physical separation of the SECRET high tactical network from the UNCLASSIFIED MILNET. The data is then transferred via E-mail. There are plans are to link the tactical and strategic world through a TPN/DDN gateway.

SPLIT OPERATIONS

As described in Chapter 26, the contingency size and nature of operations will determine the mix of military personnel elements and equipment. Signal support must be tailorable and expandable to provide assured communications from the deployed force back to the sustaining base.

Personnel units will deploy with the minimum amount of equipment needed to perform split personnel operations. Contingency communications packages will consist of varying quantities of MSE switches, portable line-of-sight radios, and tactical multi-satellite ground terminals. This will provide connectivity back to the sustaining base for command and control and information processing.

SIDPERS transactions can be processed on the user-owned automation device (TACCS, CTASC-II) and sent to the CAISI. The information is forwarded to the MSE switch and then transmitted through a satellite system back to the sustaining base for processing. (Figure A-5)

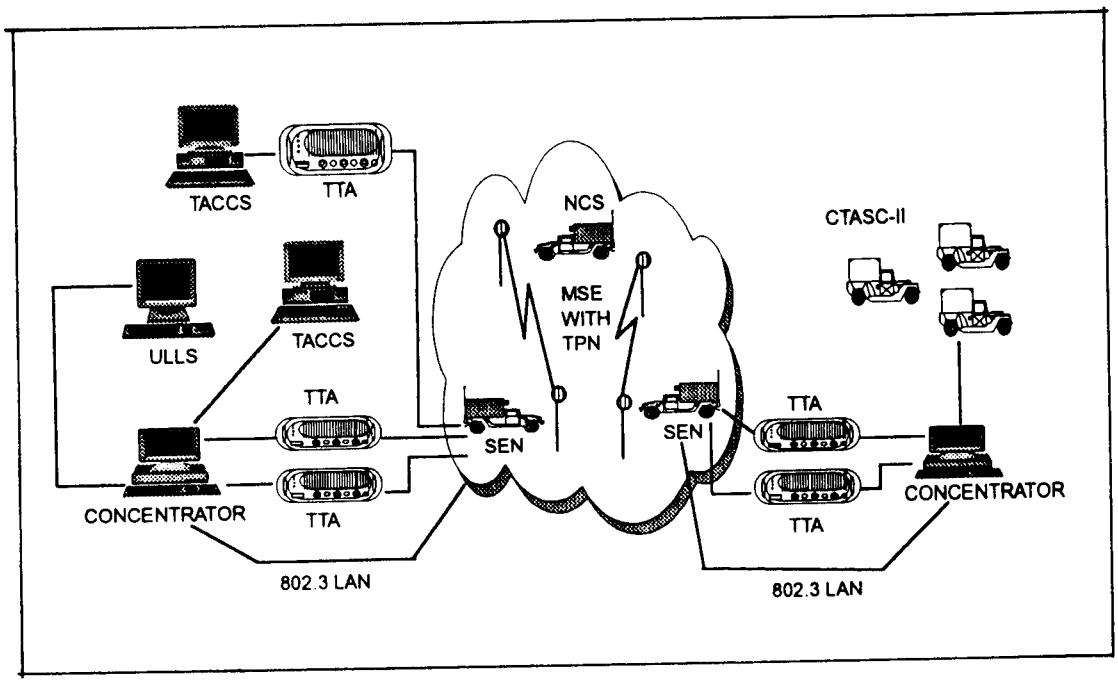

FIGURE A-4

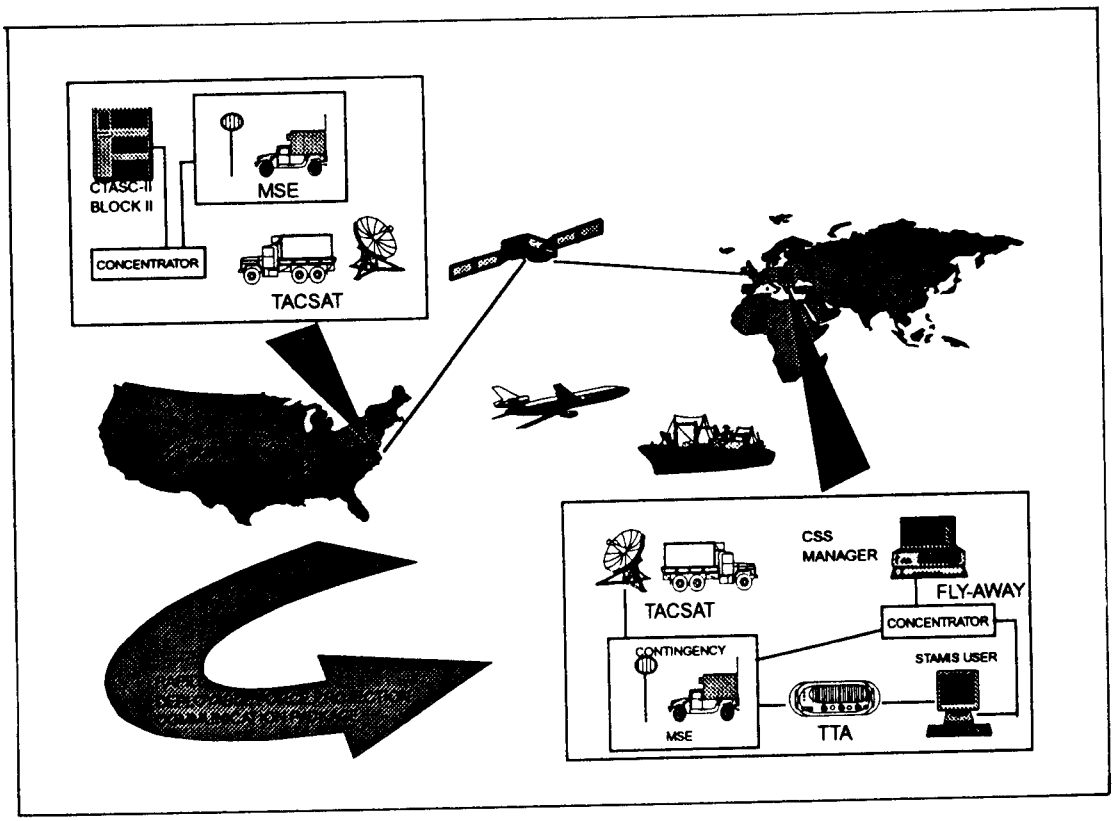

FIGURE A-5